

FIG. 1

Send, from TIU_0 to GL_0 and GL_T , a setup message for the call ~210

Establish a gate at NED_T upon receiving the setup message from GL_T ~220

Establish a gate at NED_0 upon receiving the setup message from GL_0 ~230

Send a reserve message from TIU_0 to NED_0 ~240

Send a reserve message from TIU_T to NED_T ~250

Exchange end-to-end message between TIU_0 and TIU_T ~260

Upon connecting the calling party and the called party, send a commit message from TIU_0 to NED_0 and from TIU_T to NED_T ~270

Upon receiving the commit message at NED_0 , open the gate at NED_0 ~280

Upon receiving the commit message at NED_T , open the gate at NED_T ~290

Calling party goes off-hook and dials a telephone number of the called party

~ 310

TIU₀ collects the dialed digits

~ 320

TIU₀ sends a setup message to GC₀

~ 330

Forward the setup message to GC_T

~ 340

Forward the setup message to TIU_T

~ 350

If the destination address of the setup message matches TIU_T, sending to the TIU₀ a setup acknowledgement message

~ 360

Reserve network resources

~ 370

Send from TIU₀ to TIU_T an end-to-end Ring message

~ 380

Send from TIU_T to TIU₀ an end-to-end Ringback message

~ 390

Upon call acceptance by the called party, send an end-to-end Connect message from TIU_T to TIU₀

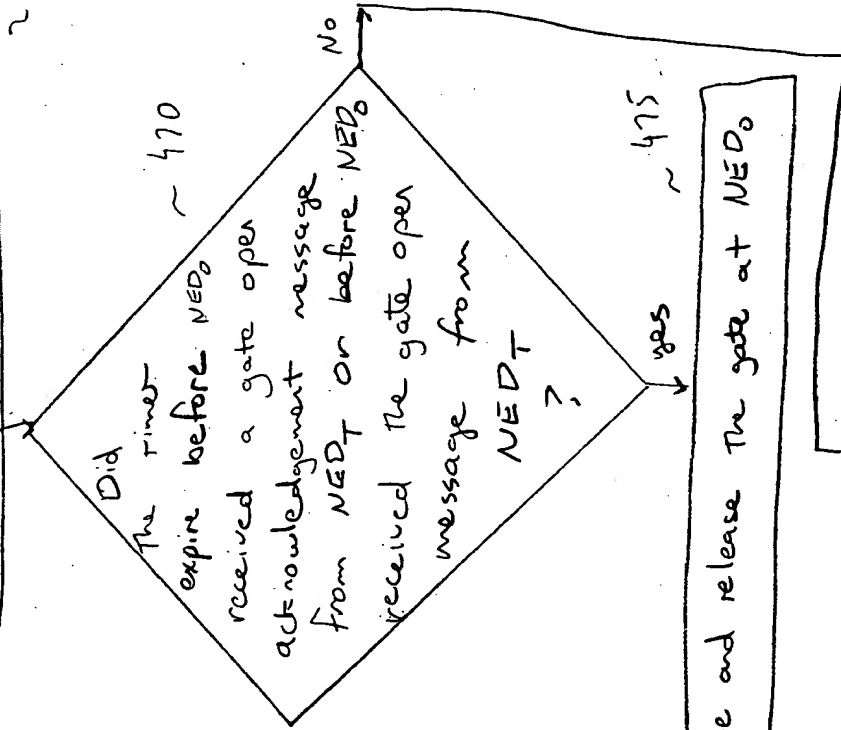
~ 395

FIG. 3

Upon receiving a Commit message from TIU₀, initiate a timer associated with a gate at NED₀.

Send a gate open message from NED₀ to NED_T.

Upon receiving the gate open message from NED_T, send a gate open acknowledgement message from NED₀ to NED_T.



Upon receiving a Commit message from TIU_T, initiate a timer associated with a gate at NED₀.

Send a gate open message from NED_T to NED₀.

Upon receiving the gate open message from NED₀, send a gate open acknowledgement message from NED_T to NED₀.

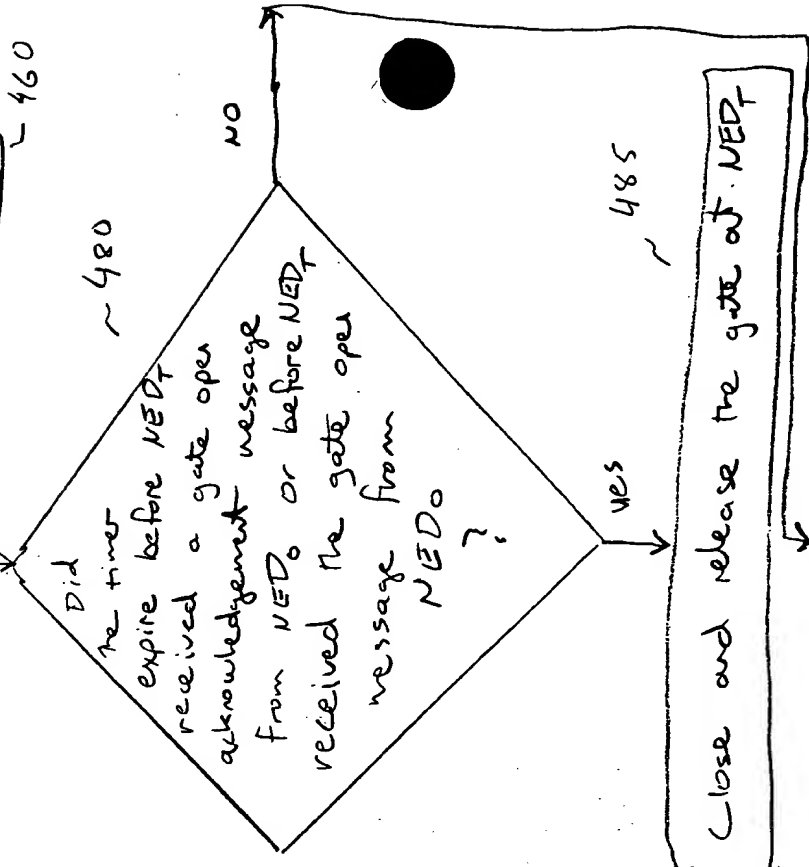


FIG. 4

Packets are sent from TIU_0 to NED_0 ~ 500

↓
Translate the local source address and local destination address to a global source address and a global destination address ~ 510

↓ ~ 520
Forward the translated packets from NED_0 to NED_T

↓
Translate the global source address and the global destination address to a second local source address and a second local address ~ 530

↓
Send the translated packets from NED_T to TIU_T ~ 540

Fig. 5

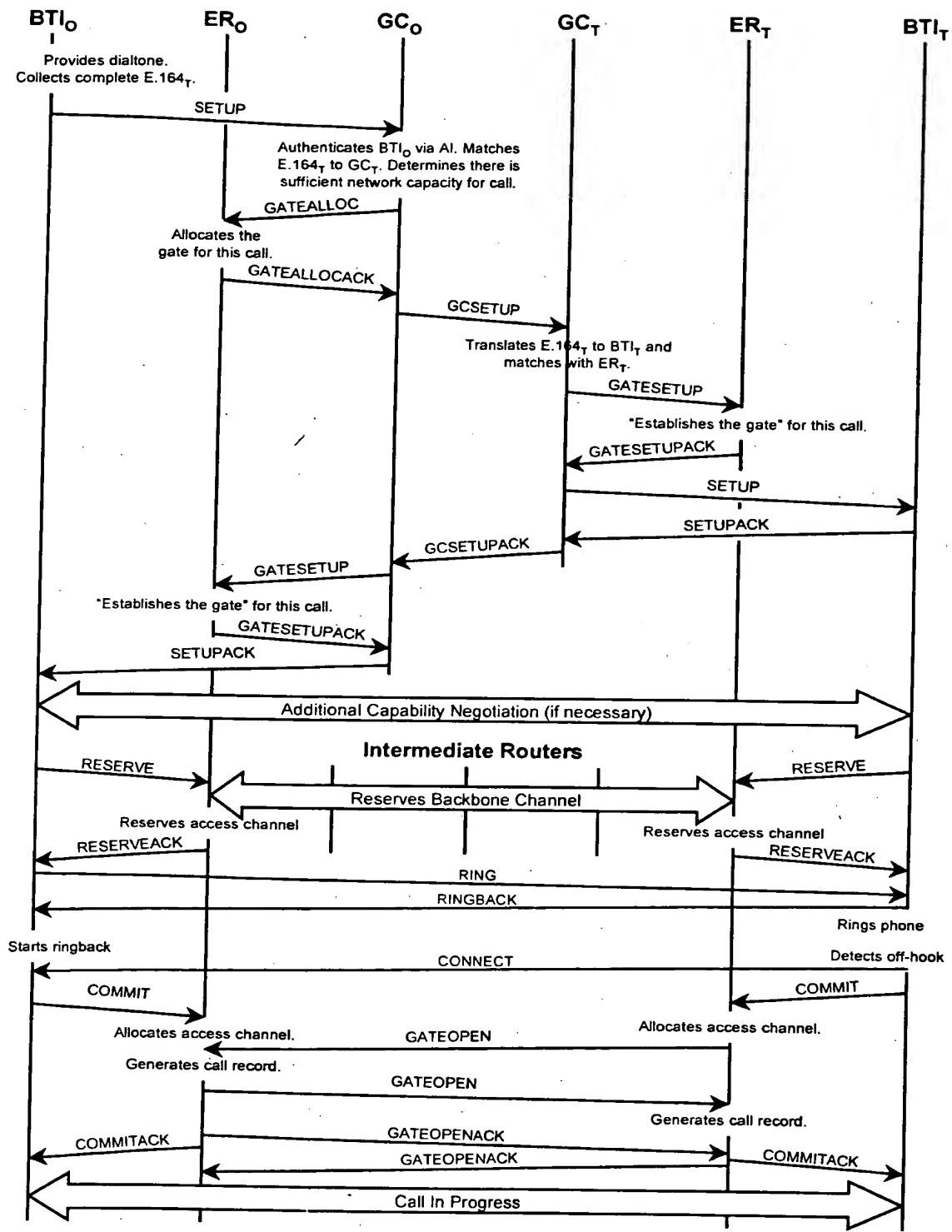


Figure 6

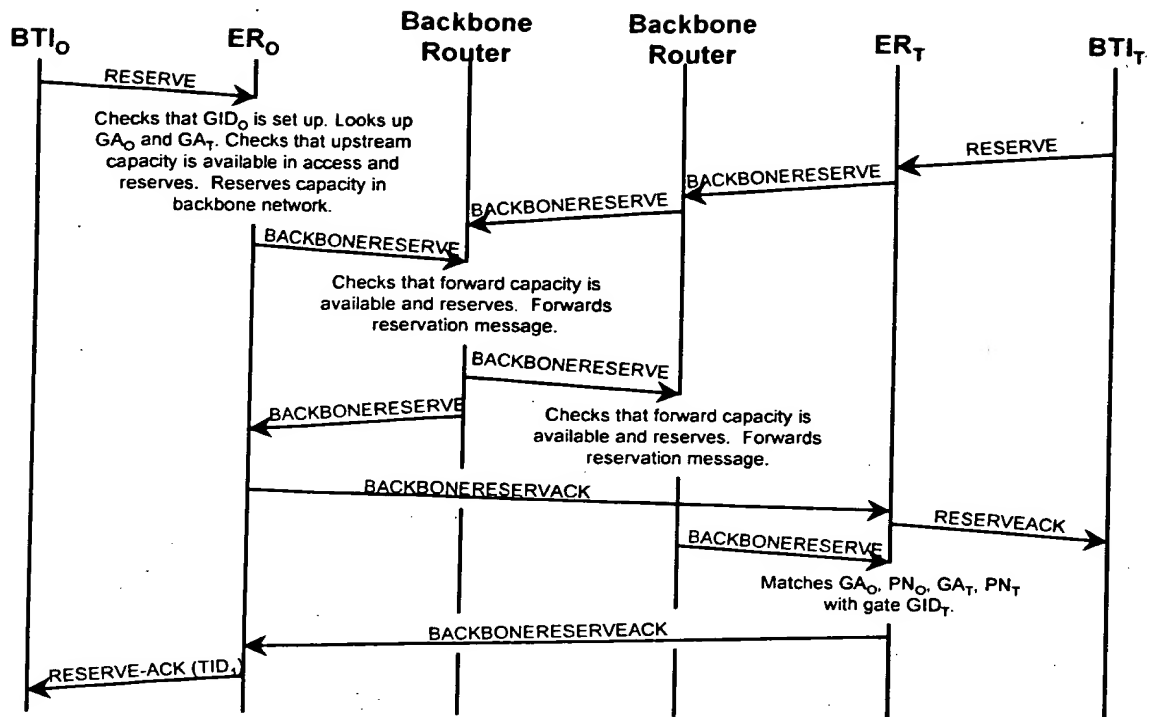


Figure 7

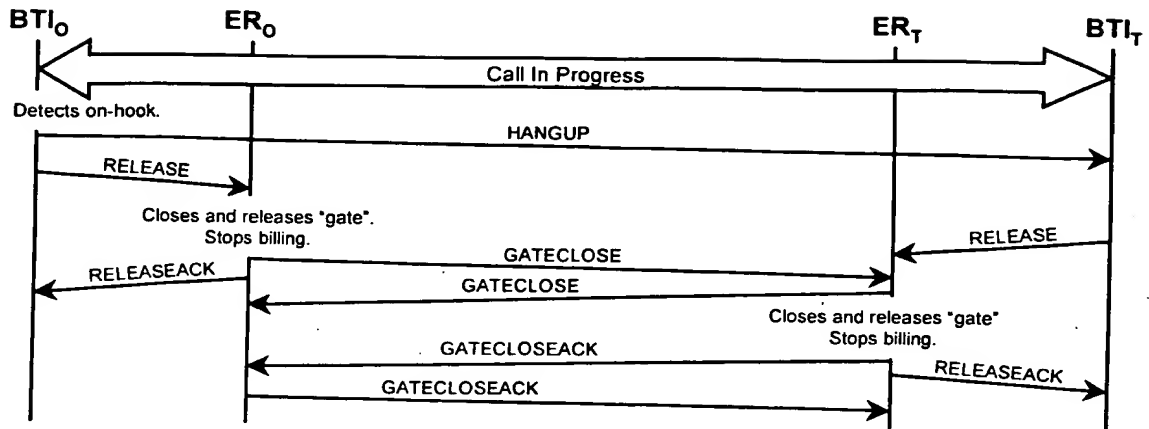


Figure 8

66262512

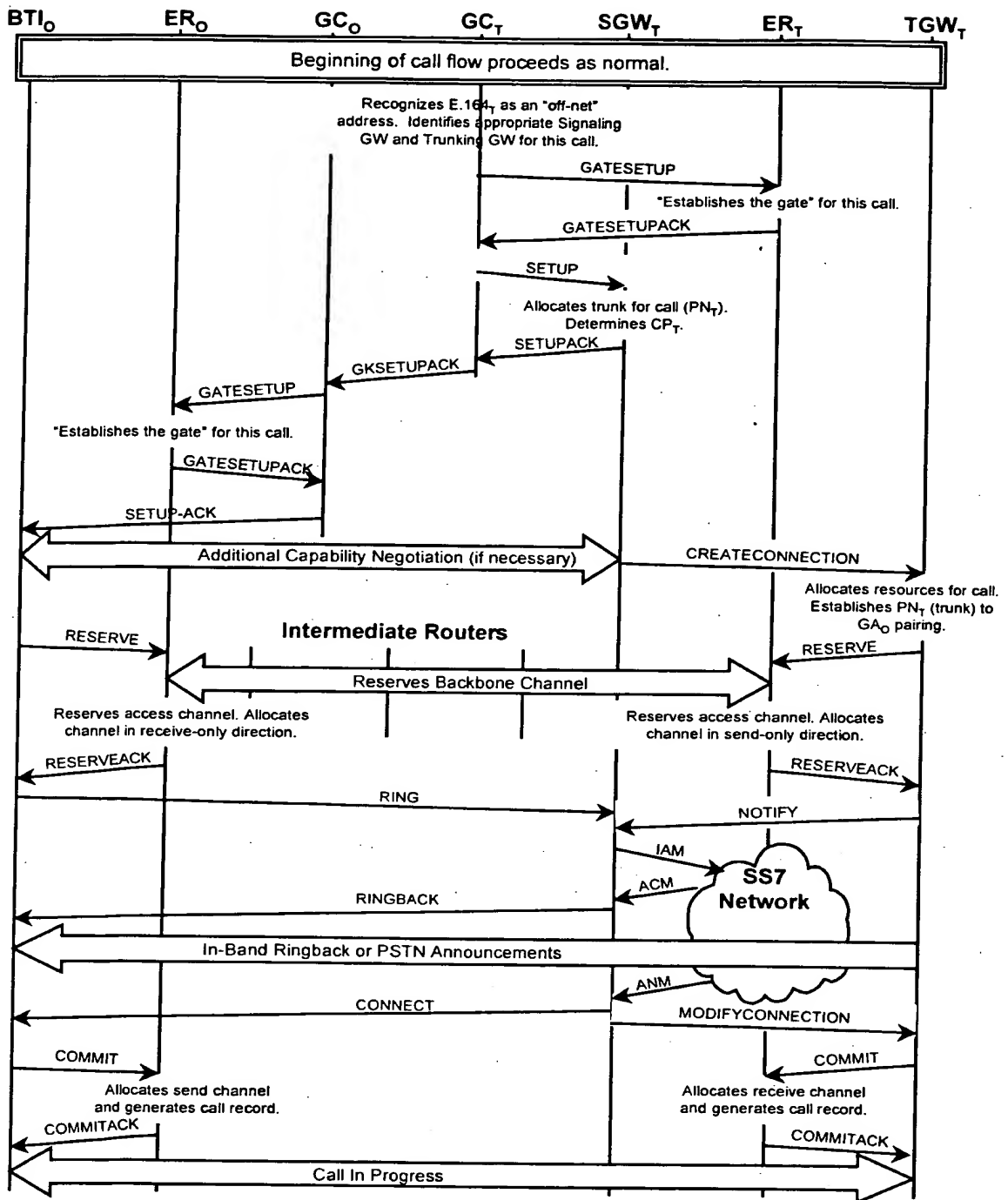


Figure 9

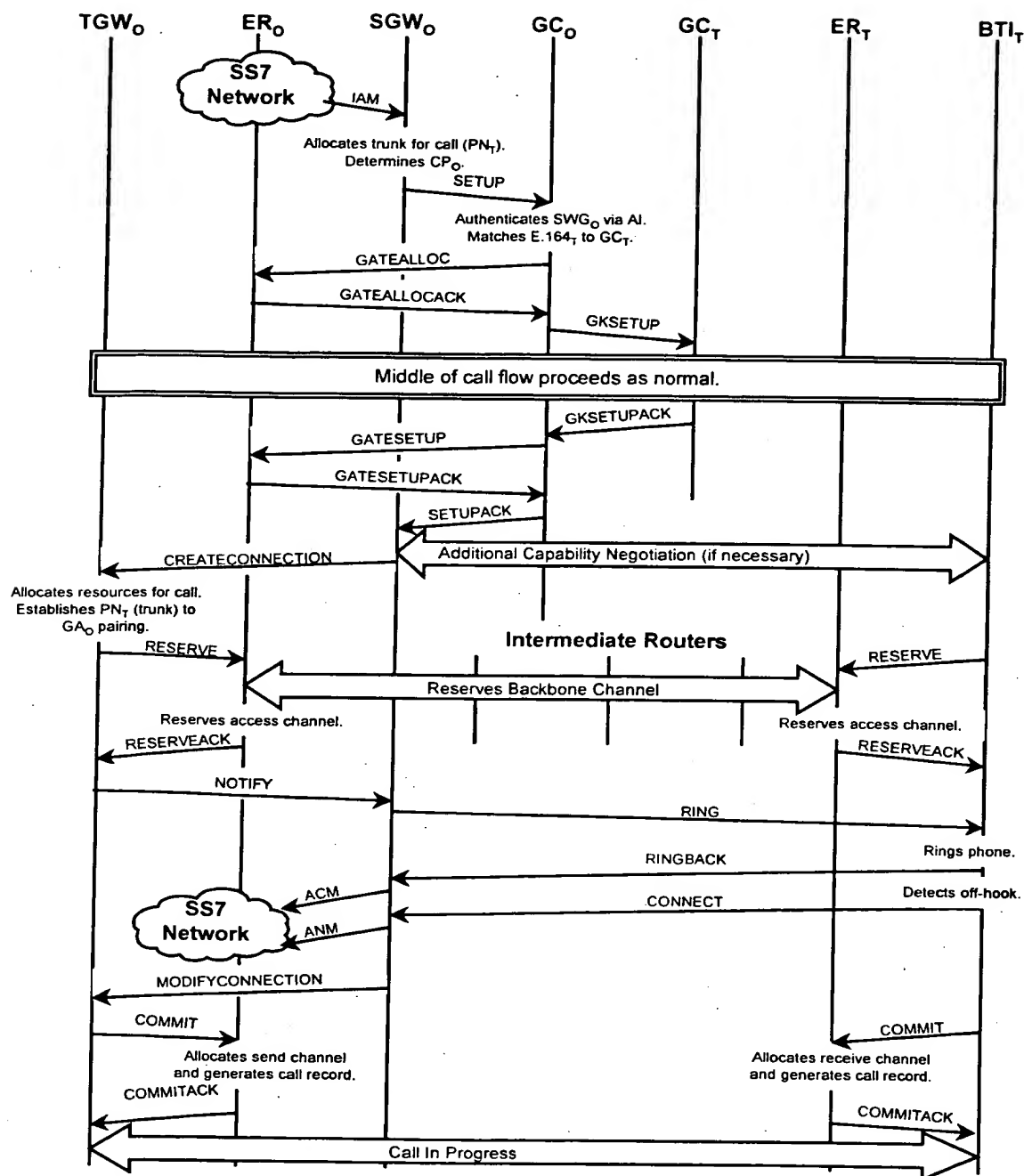


Figure 10

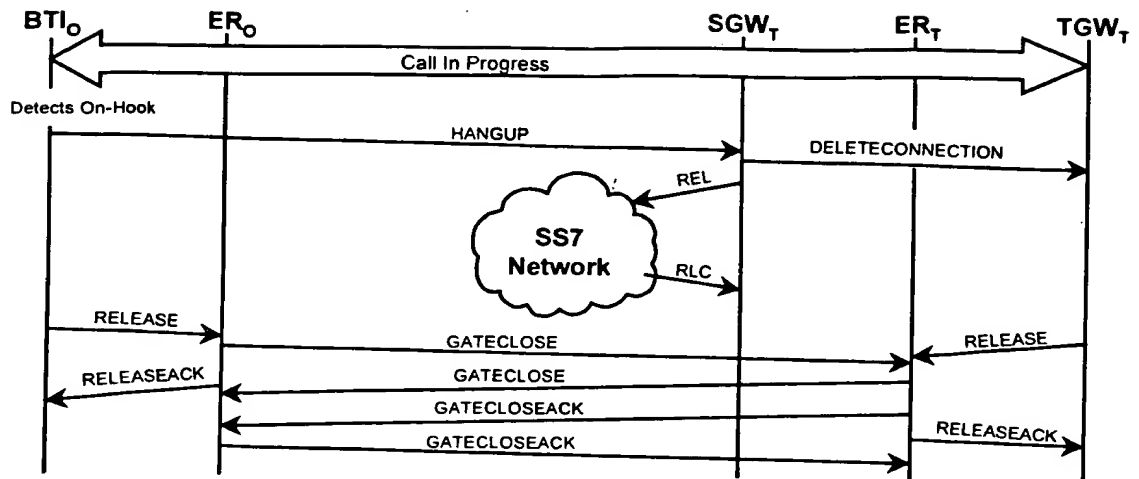


Figure 11

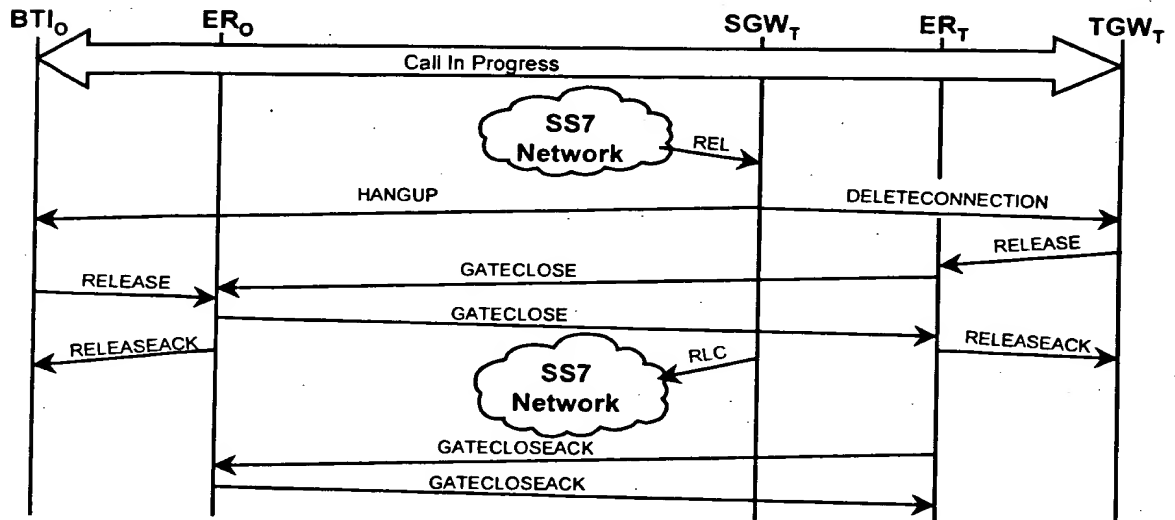


Figure 12

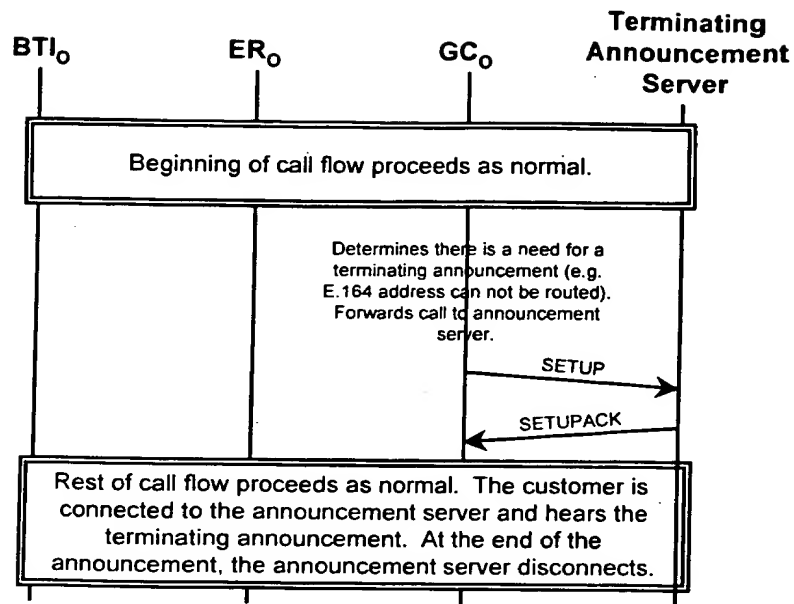


Figure 13

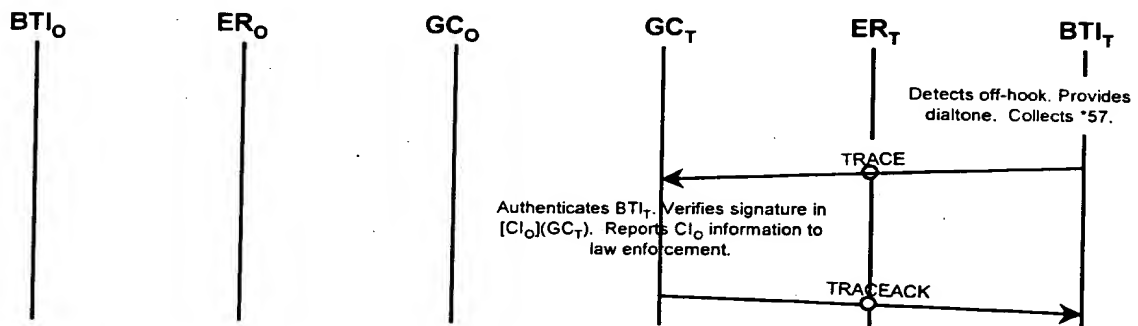


Figure 14

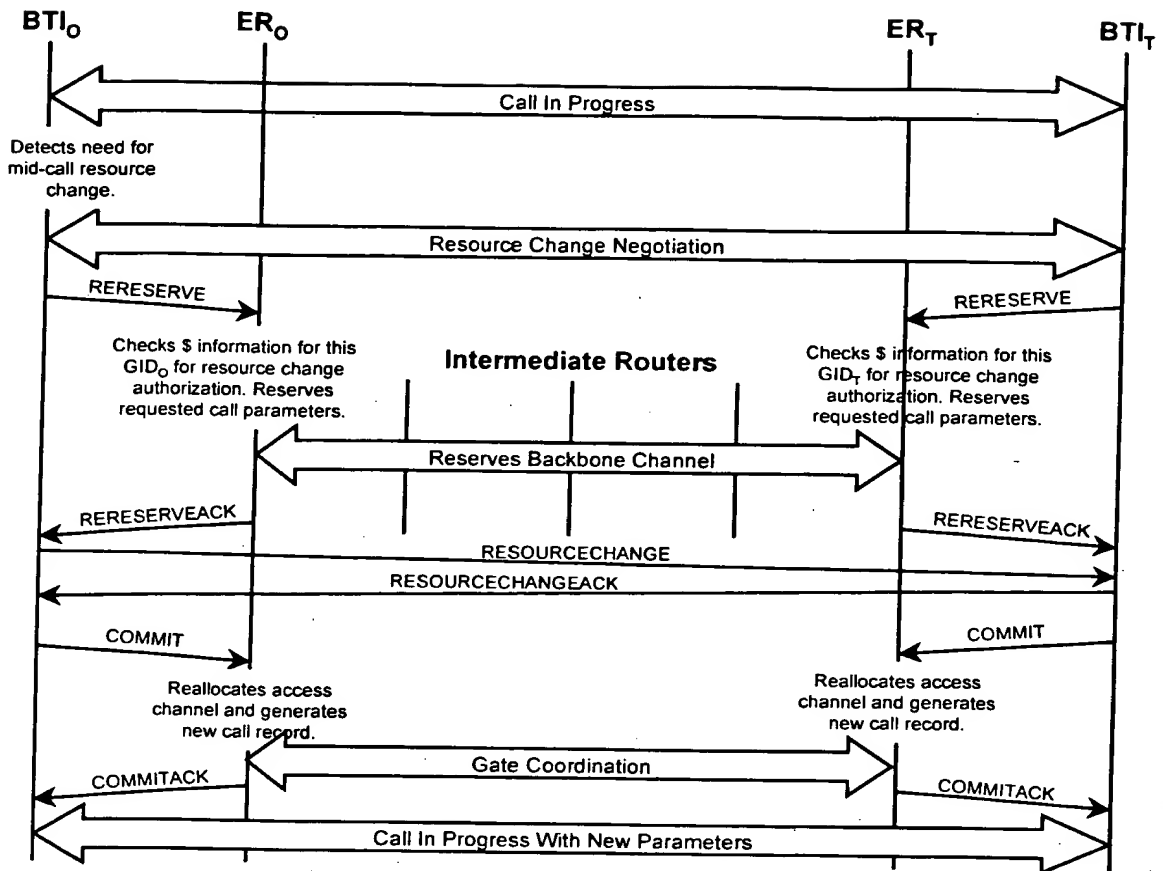


Figure 15

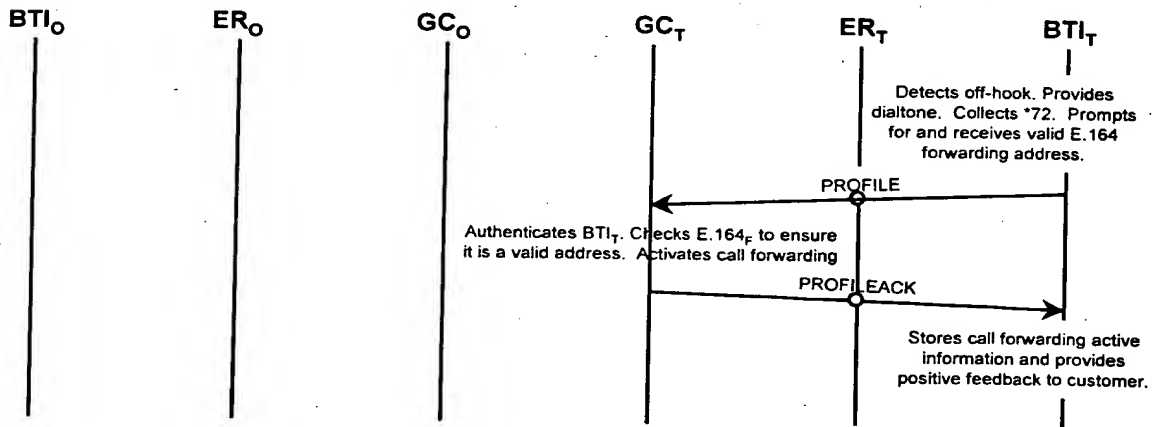


Figure 16

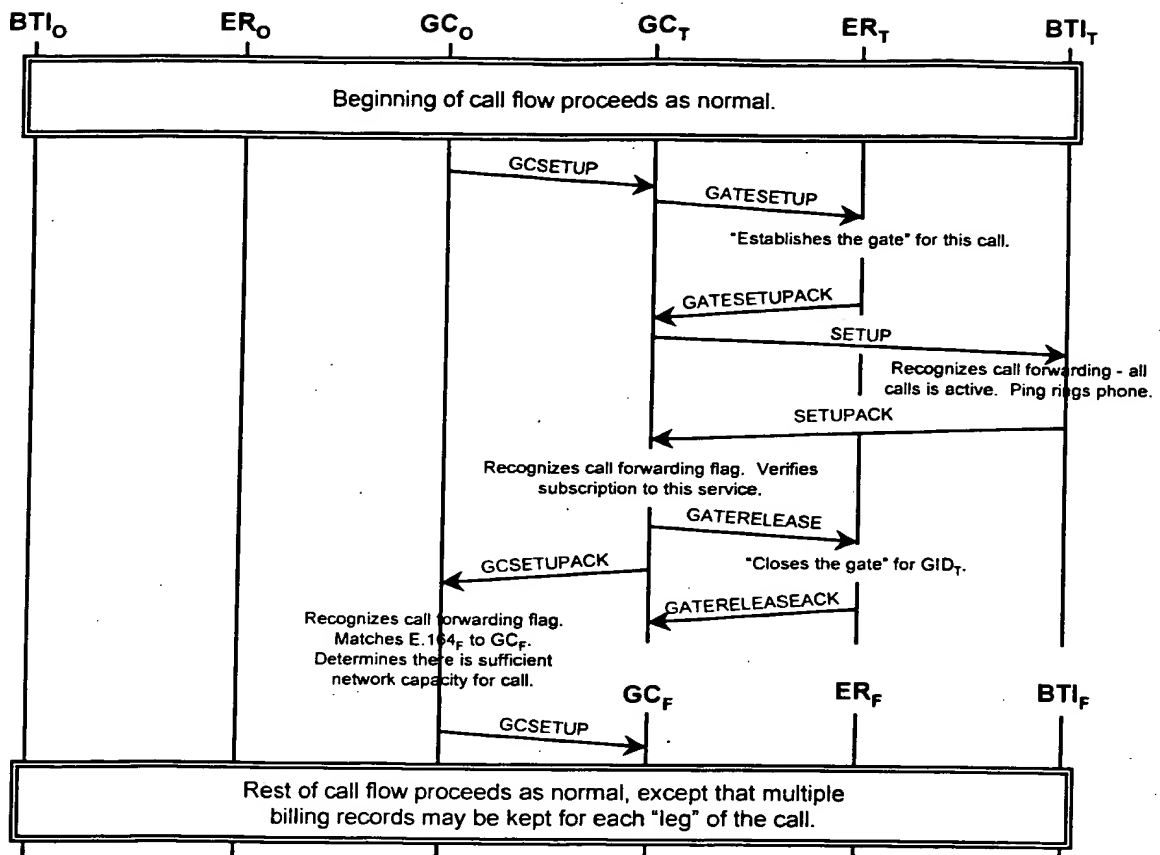


Figure 17

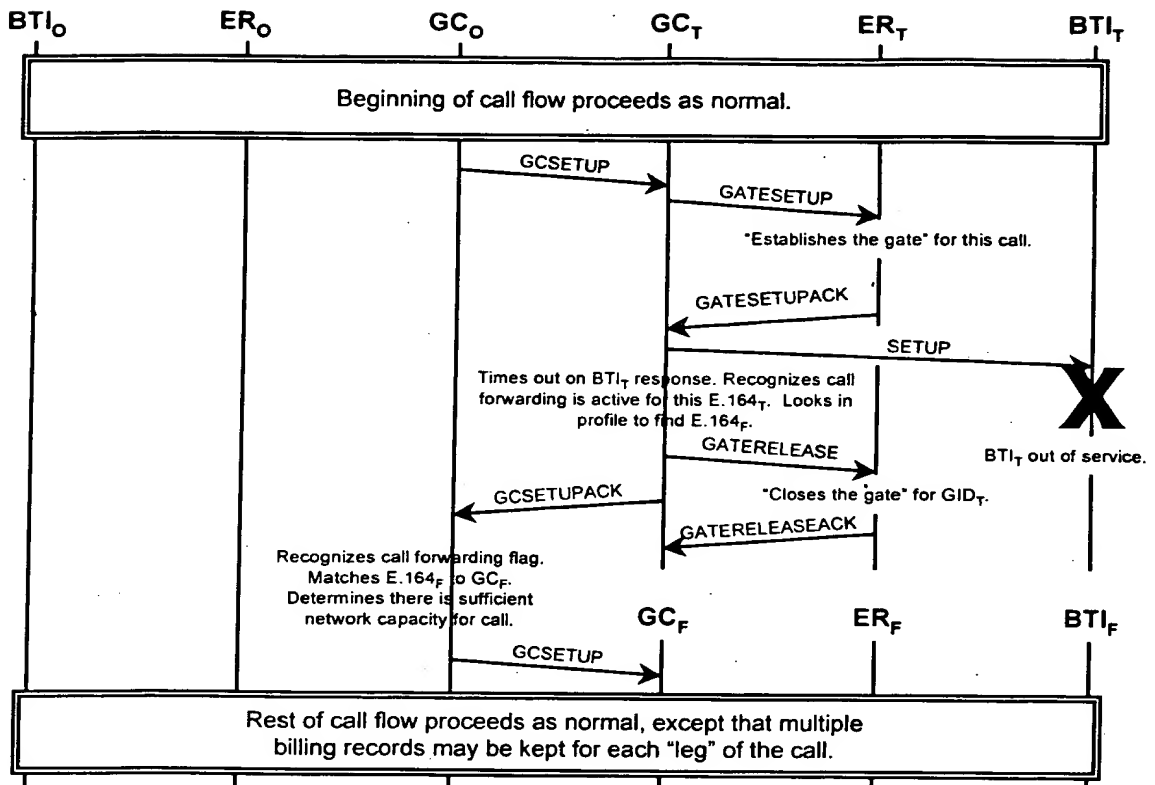


Figure 18

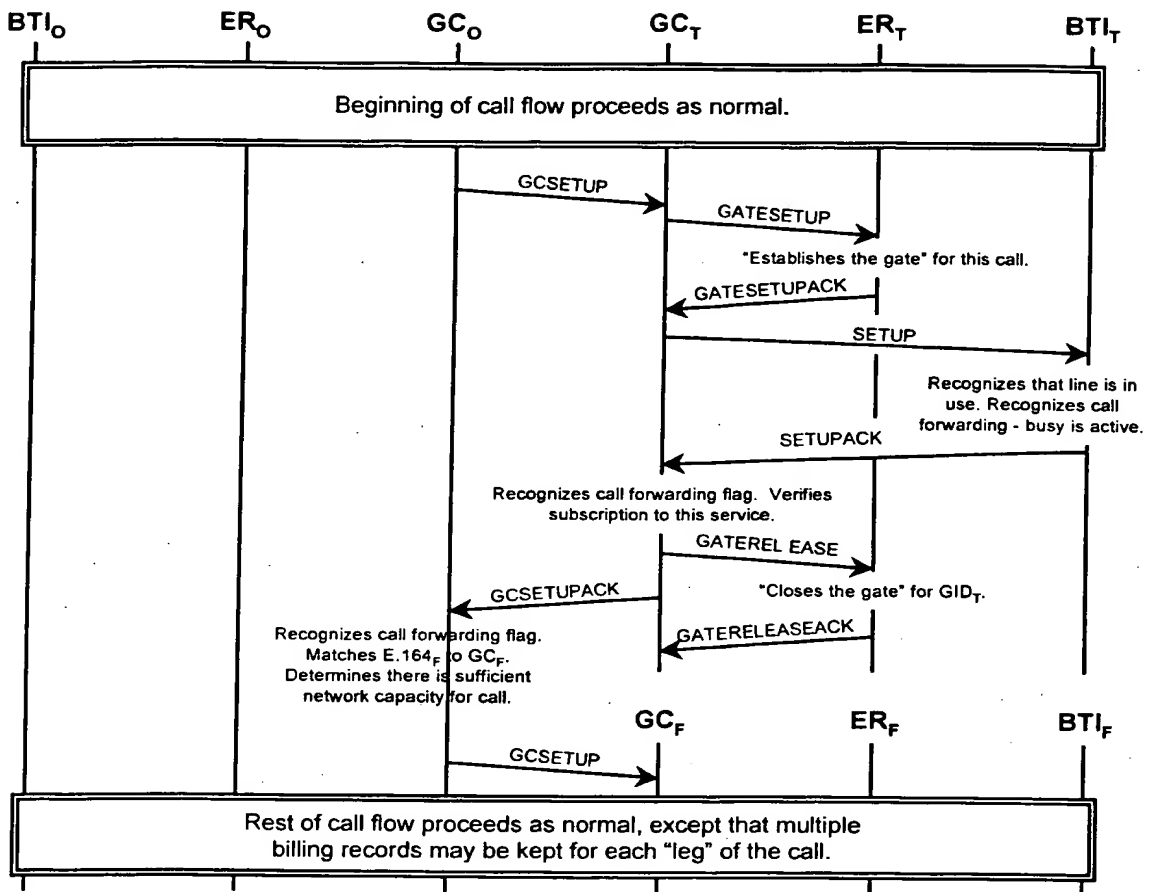


Figure 19

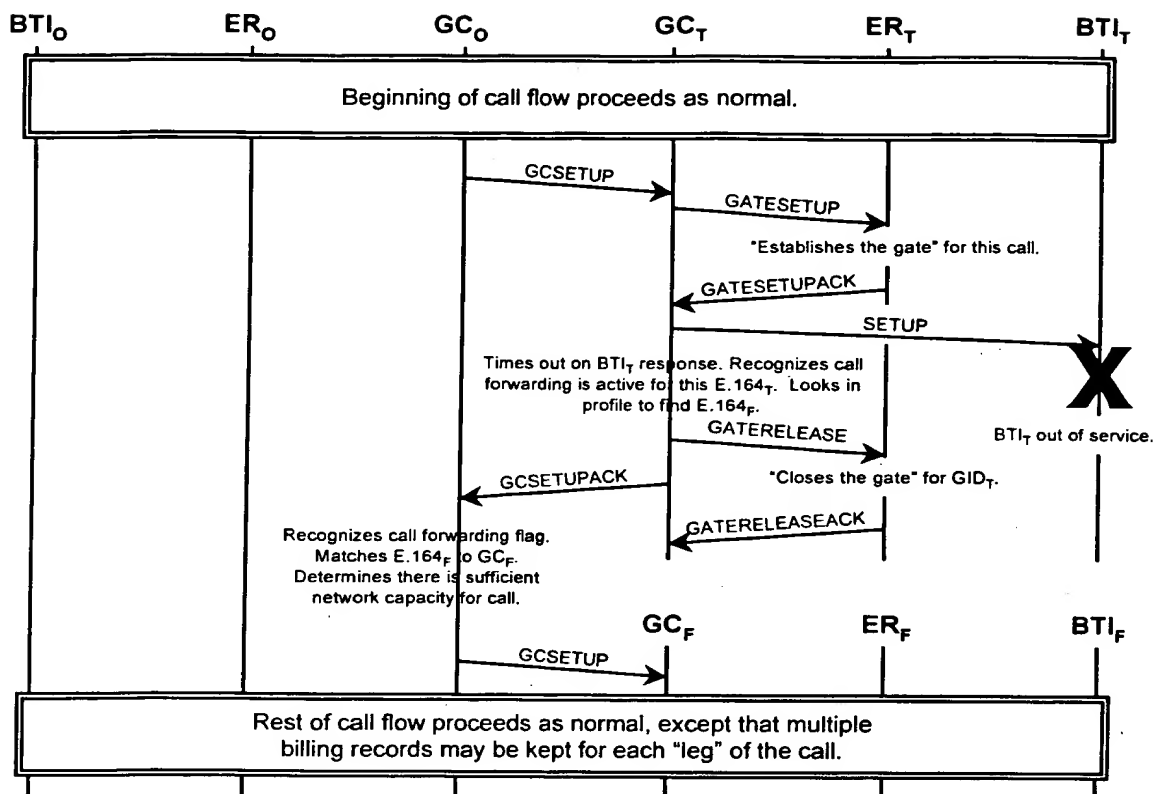


Figure 20

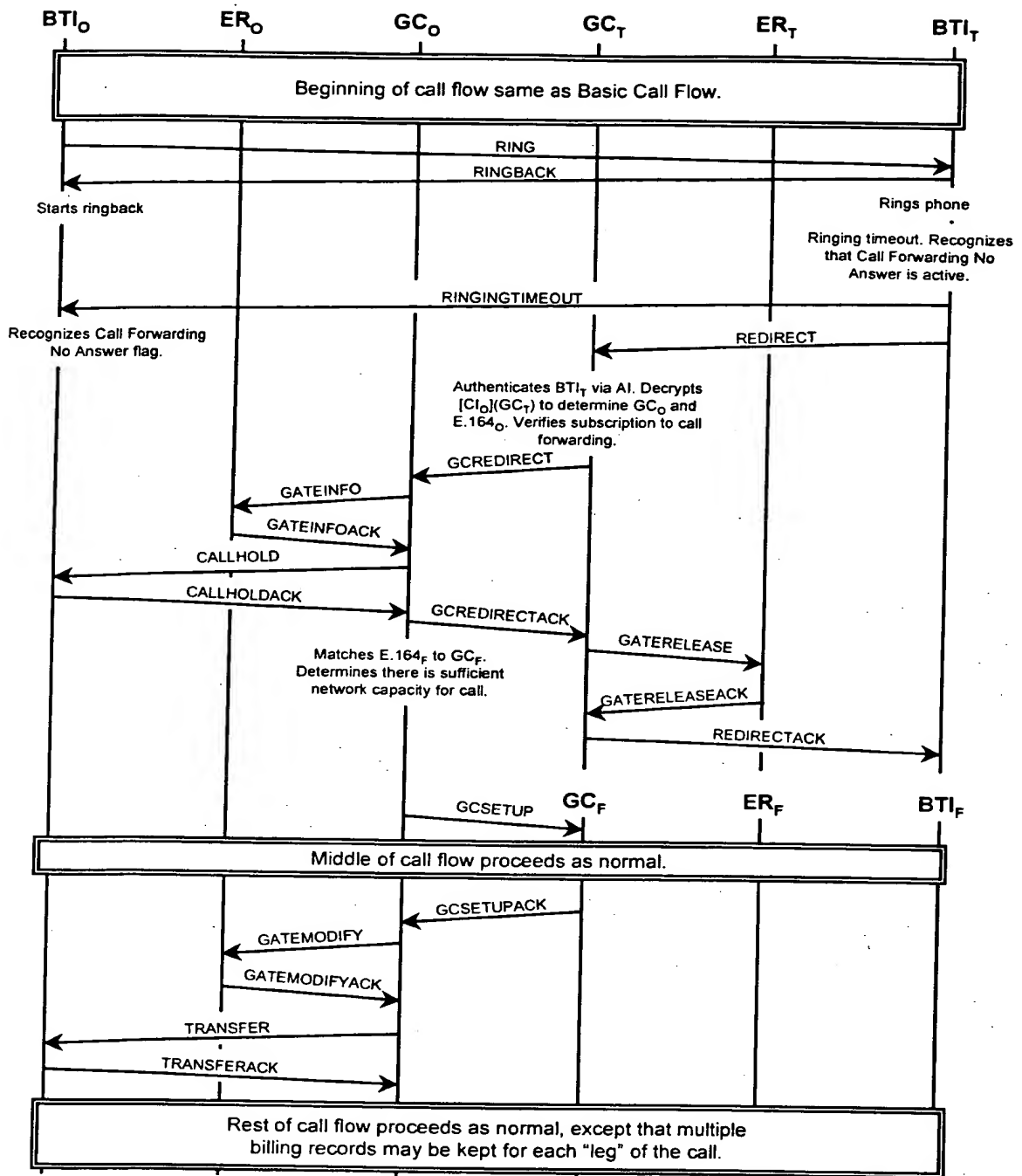


Figure 21

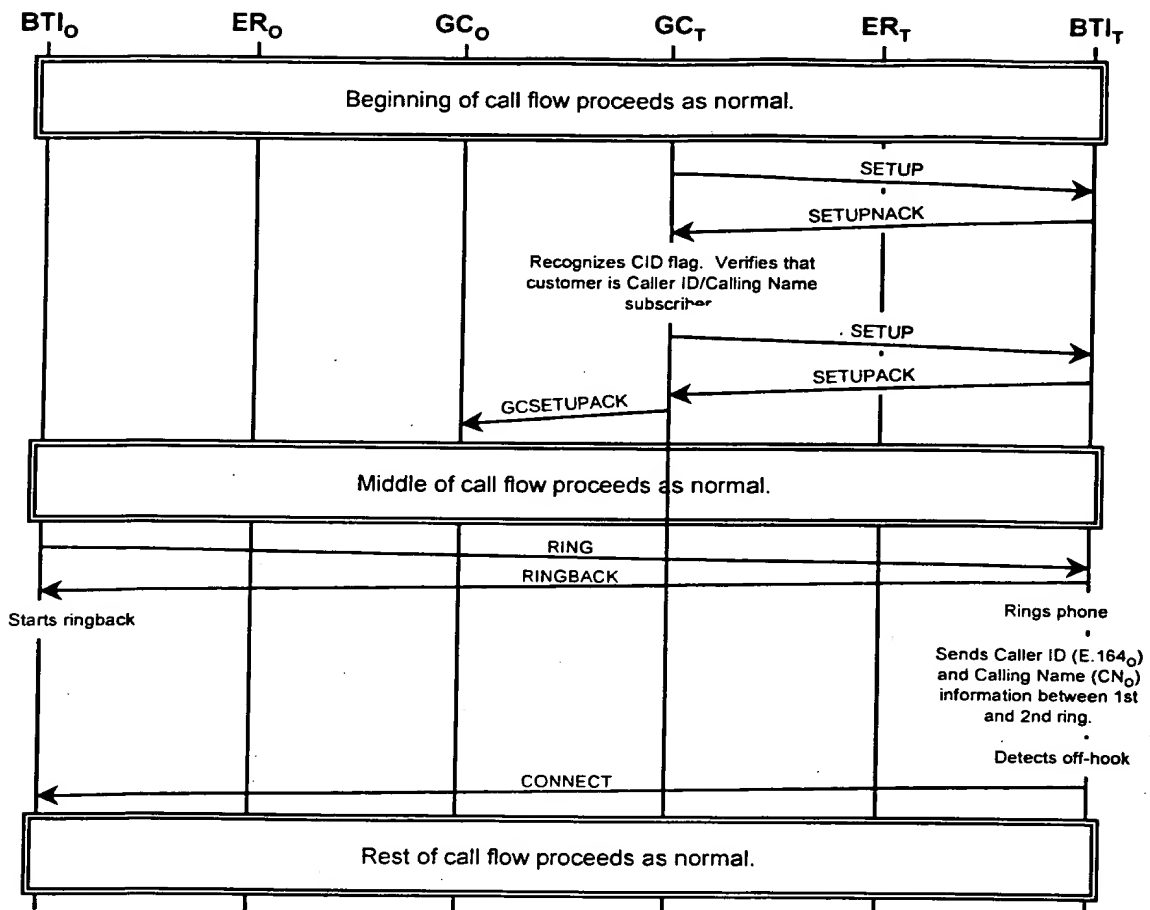


Figure 23

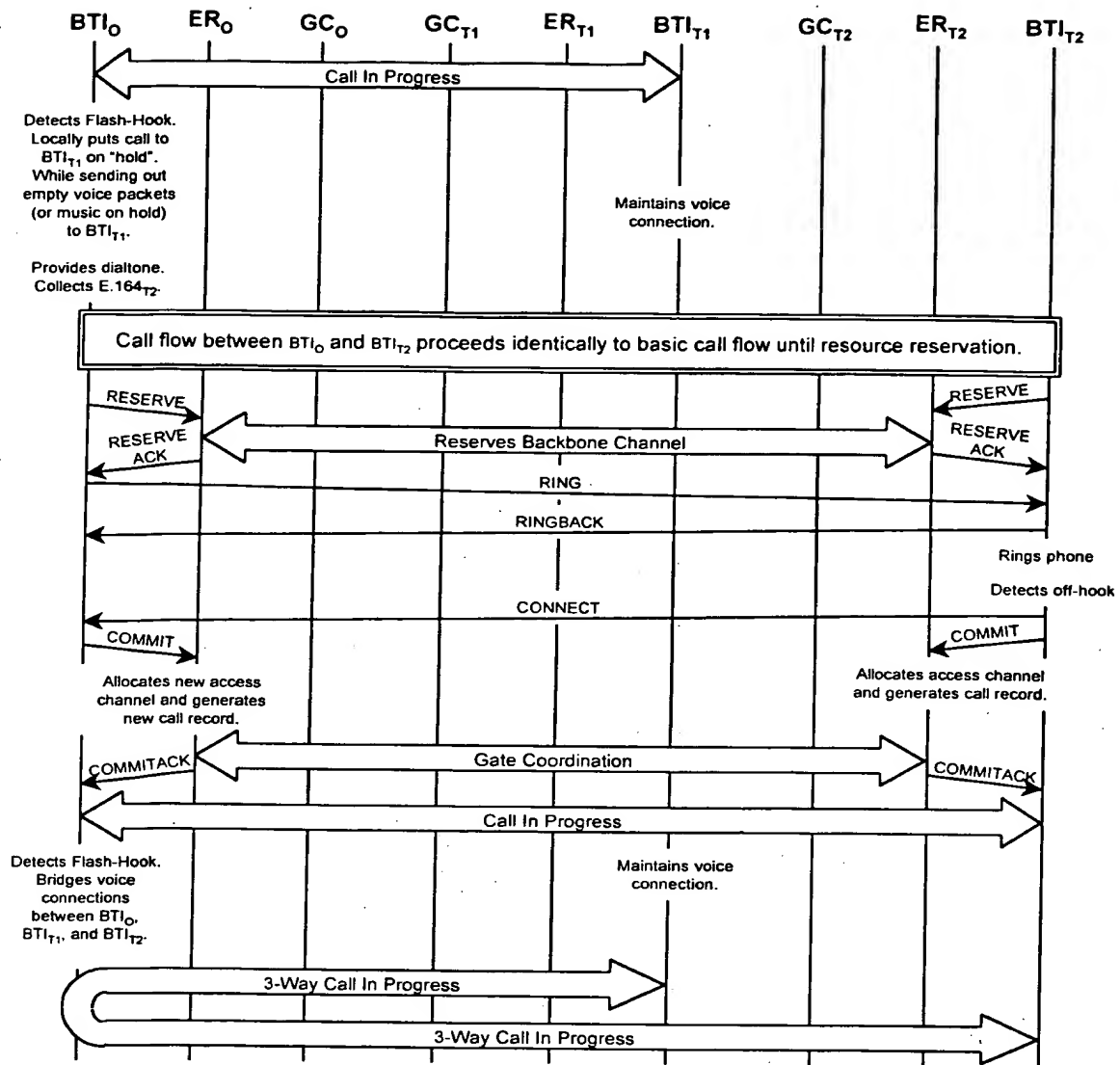


Figure 25

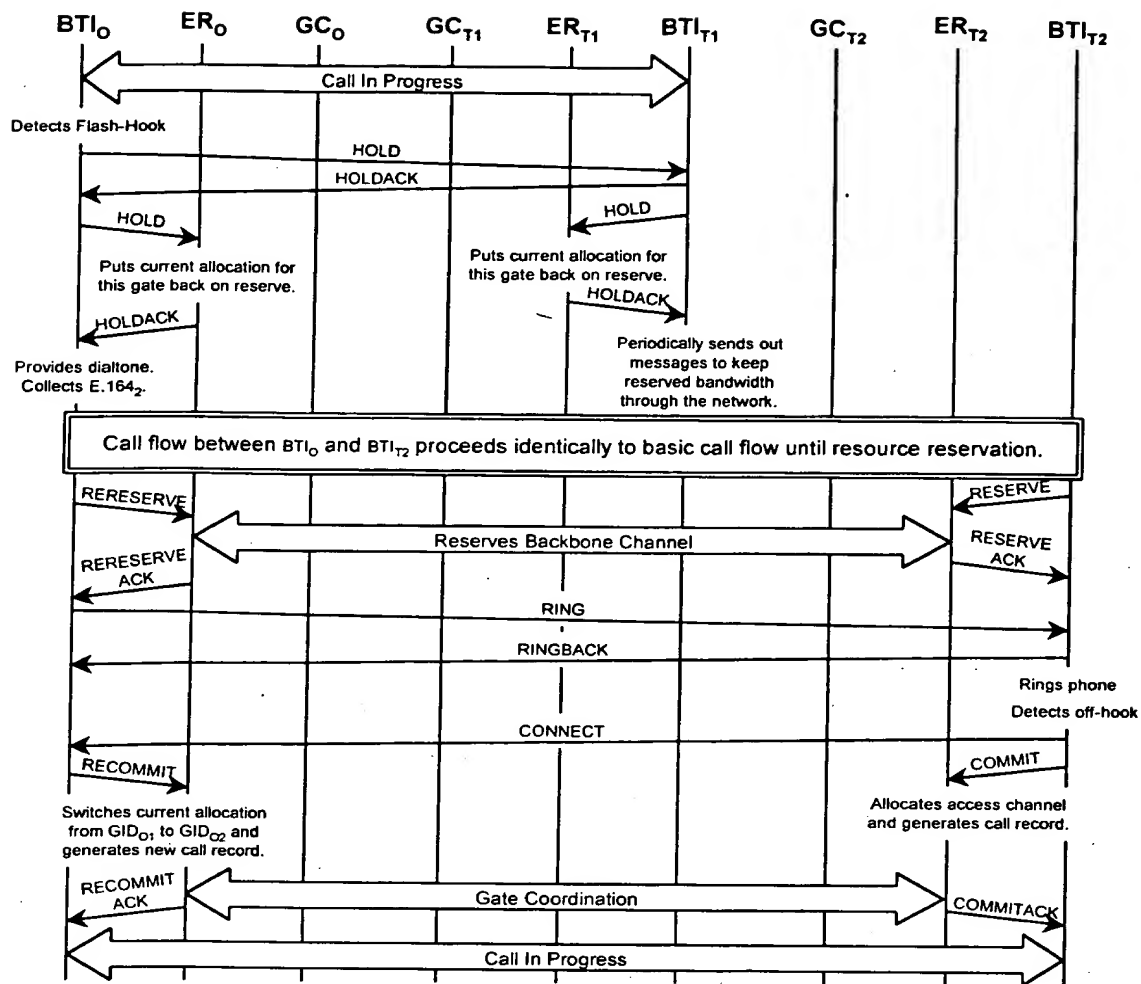


Figure 26

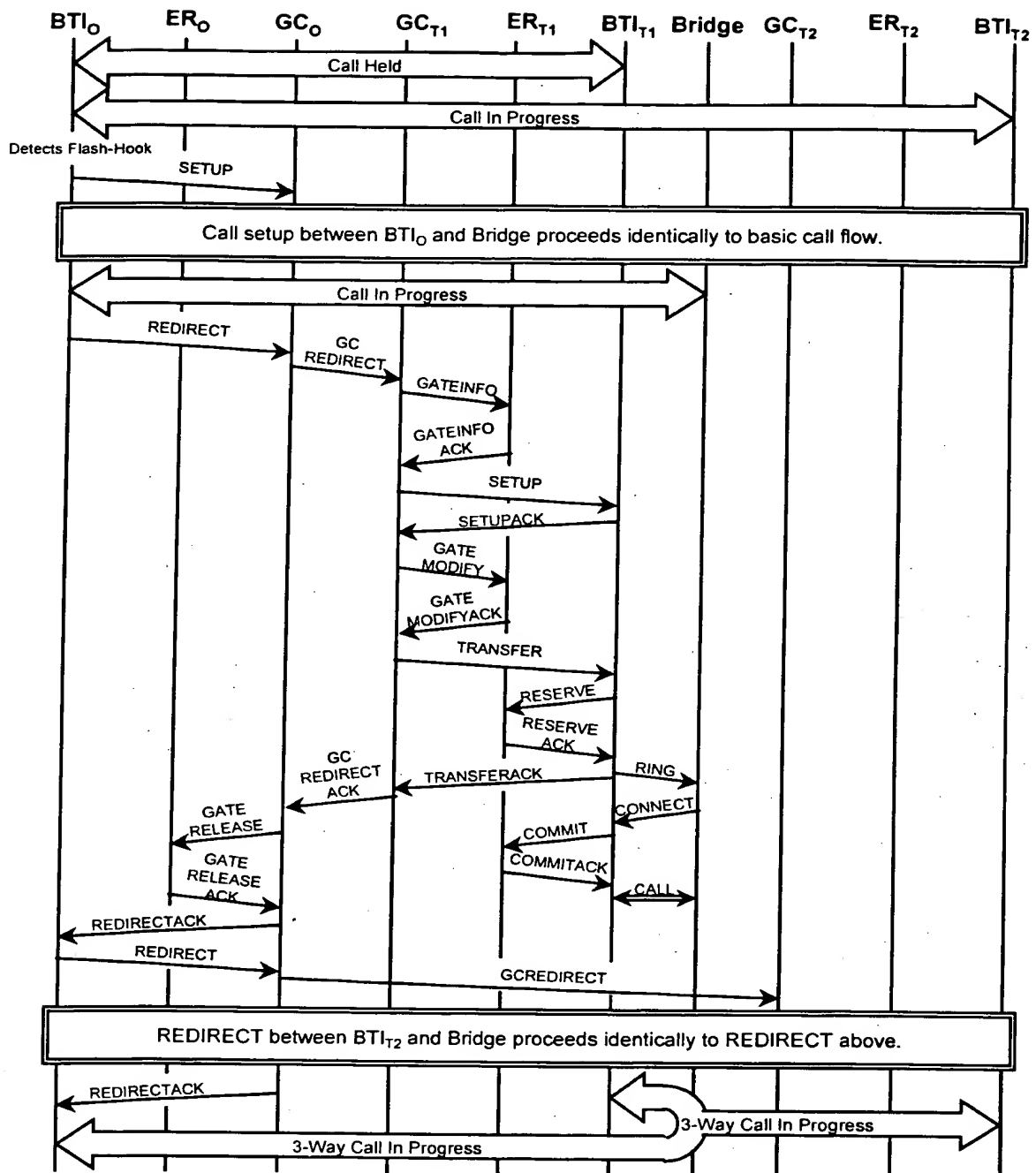


Figure 27

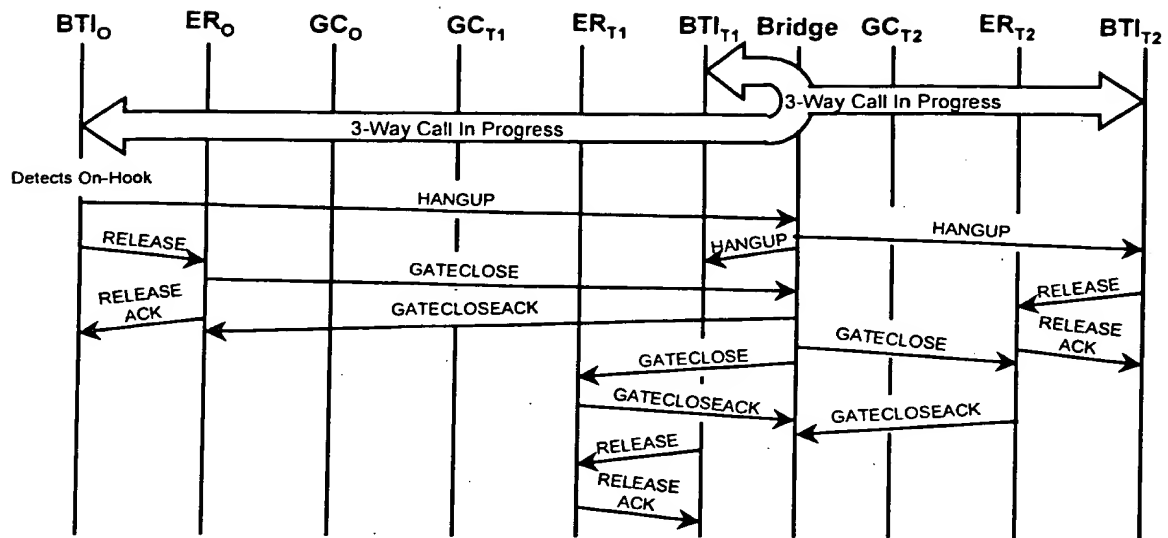


Figure 28

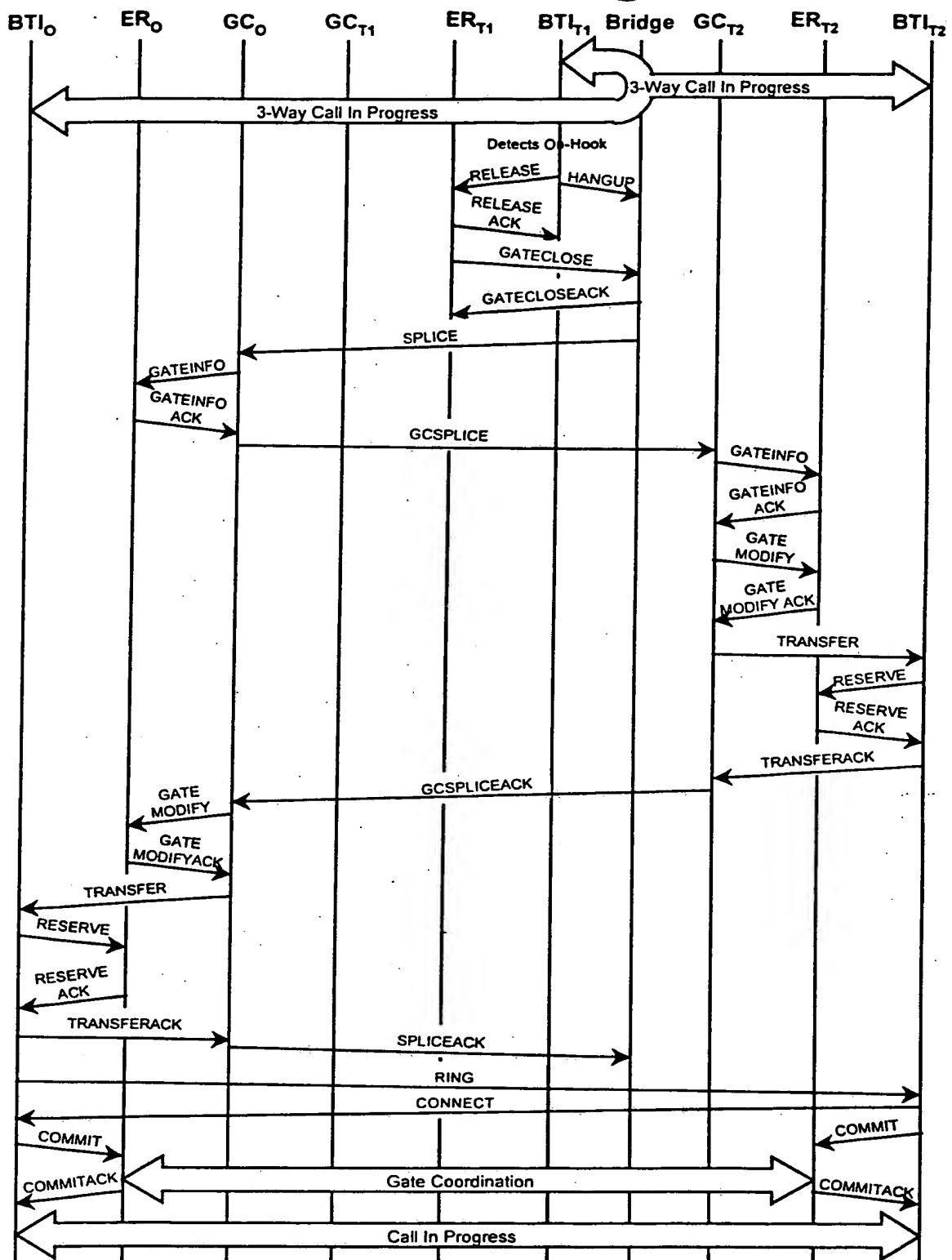


Figure 29

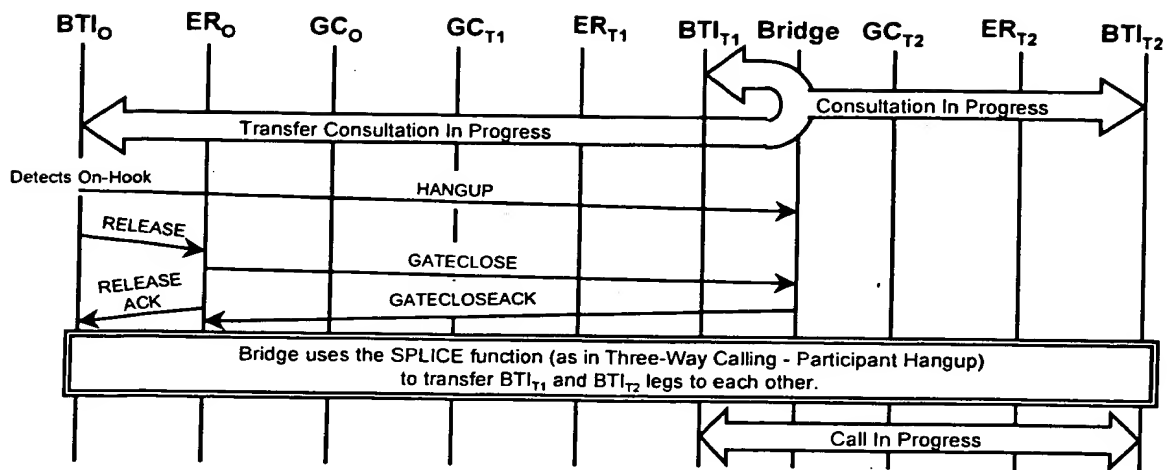


Figure 30

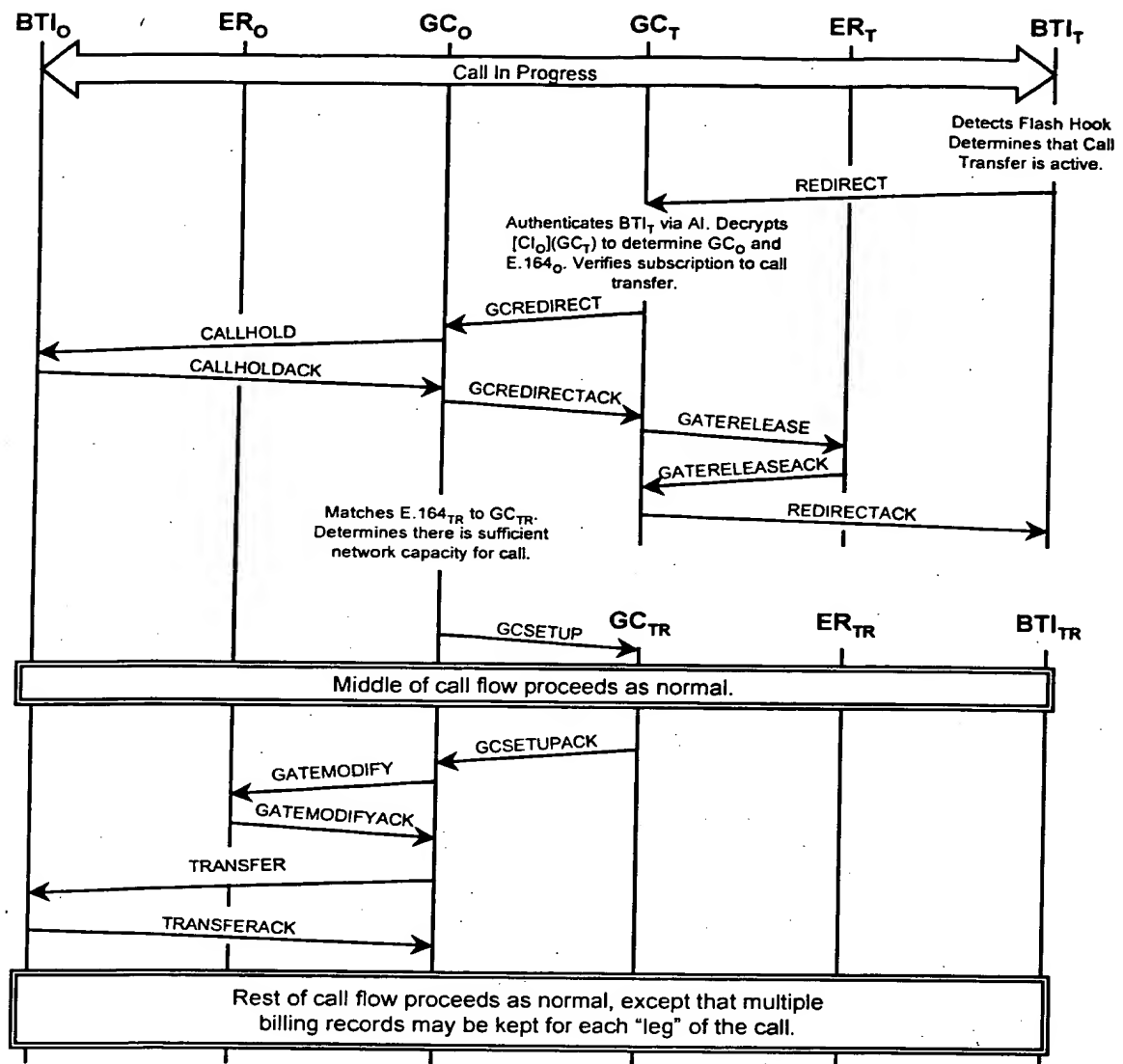


Figure 31

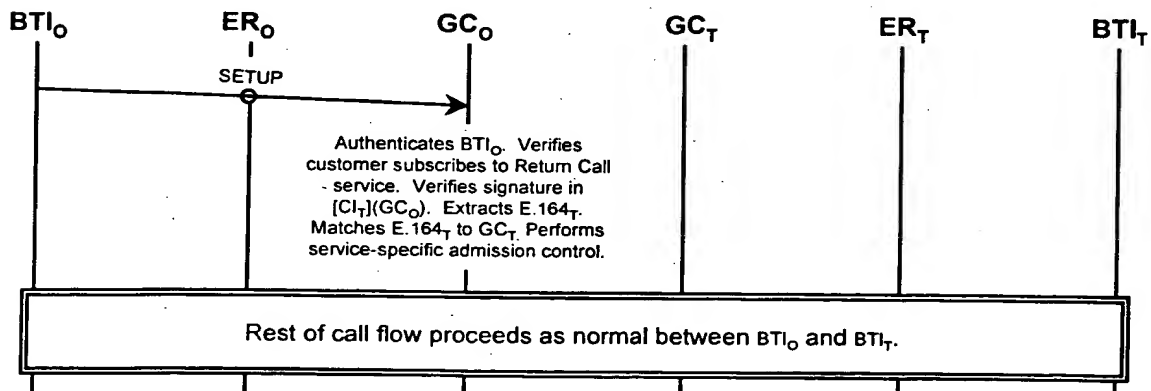


Figure 32

Sending a ring message to a terminating TIU ~ 1000

Upon ringing the terminating telephone, sending a ring back message from the terminating TIU to the originating TIU ~ 1100

Selecting a prestored ringback signal from a set of prestored ringback signals, the selected prestored ringback signal being associated with terminating access network ~ 1200

Sending the selected prestored ringback signal to the calling party ~ 1300

Upon the called party going off hook, sending a connect message from the called party to the calling party ~ 1400

Discontinue providing the ring back signal to the calling party ~ 1500

Process the call as normal ~ 1600

FIG. 33

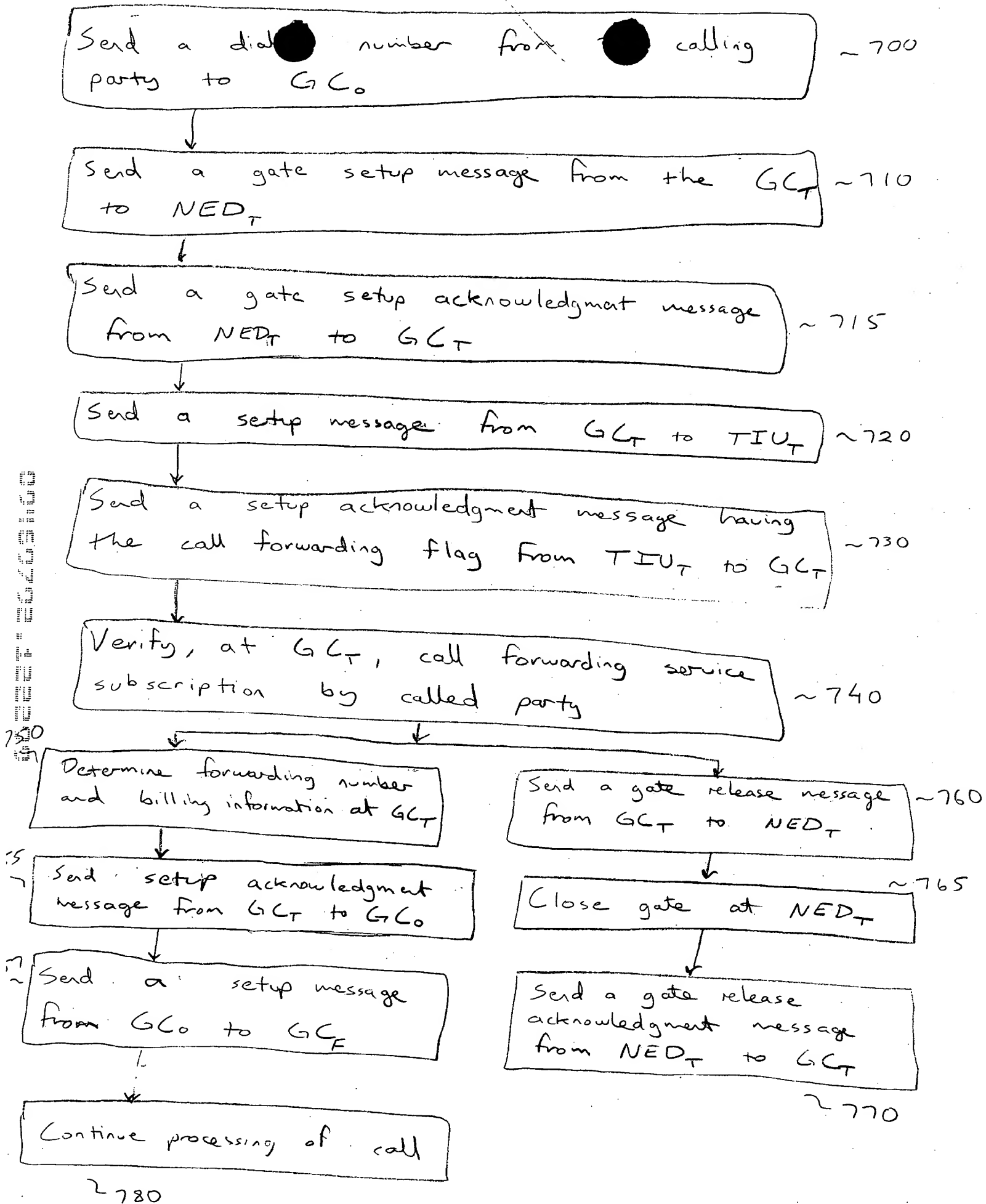


FIG. 34

Upon ringing timeout, send a ring timeout message
from TIU_T to TIU_0 .

~ 800

Send a redirect message from TIU_T to GC_T ~ 810

Verify, at GC_T , call forwarding service subscription by
called party ~ 820

~ 830

Determine, at GC_T , the forwarding number and billing information

Send a GC redirect message from GC_T to GC_0
with billing information ~ 840

Send a call hold message from GC_0 to TIU_0 ~ 850

~ 860

Send a GC setup message
from GC_0 to GC_F

Send a gate release message
from GC_T to NED_T

Send a GC setup acknowledgment message from GC_F to GC_0

Send a Gate modify message from GC_0 to NED_0

Send a Transfer message from GC_0 to TIU_0

Continue processing of the call

FIG. 35

Receiving a surveillance request from a surveillance receiver ~ 900

Modifying a database record associated with the communication line to indicate a surveillance request ~ 910

ON A PER-CALL BASIS

Upon receiving a setup message at GC₀, GC₀ verifies whether the communication line is to be surveilled based on database record ~ 920

Sending a message indicating the address of the surveillance receiver to NED₀ from GC₀ ~ 930

Sending a surveillance message indicating the dialed number to the surveillance receiver from GC₀ ~ 940

Sending a supplemental message with surveillance information to the surveillance receiver from NED₀ ~ 950

Multicasting packets from NED₀ to call recipients and the surveillance receiver ~ 960

Sending a supplemental message with surveillance information from NED₀ to the surveillance receiver at the end of the call ~ 970

FIG. 36

Send a reserve message from TIU_0 to NED_0 after TIU_0 sends a setup message to NED_0 and after TIU_0 receives a setup acknowledgment message

~2000

Checks availability and reserves bi-directional capacity in the originating access network

~2100

Send a backbone reserve message from NED_0 to a router within communication network

~2200

After receiving the backbone reserve message at the router within communication network, check availability and reserve forward-direction capacity

~2300

Forward the backbone reserve message from the router with the communication network

~2400

At NED_0 , receive a backbone reserve acknowledgment message from NED_T

~2500

Send a reserve acknowledgment message from NED_0 to TIU_0

~2600

FIG. 37